

### REMARKS

Applicant acknowledges receipt of an Office Action dated December 10, 2007. In this response, Applicant has amended claim 9 to correct an informality and claim 15 to incorporate the subject matter of claim 14 which has been cancelled without prejudice or disclaimer. Claim 17 has been rewritten in independent form, and claim 25 has been added. Support for new claim 25 can be found in the specification as originally filed, *inter alia*, on page 22, line 13 – page 23, line 17. Thus, claims 1-13 and 15-25 are currently pending in the application.

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

#### Claim Objections

On page 2 of the Office Action, the PTO has objected to claim 9 for alleged informalities. Additionally, the PTO has objected to claim 14 for allegedly failing to further limit the subject matter of a previous claim. In this response, Applicant has amended claim 9 and cancelled claim 14. The subject matter of claim 14 was incorporated into claim 15.

#### Rejection Under 35 U.S.C. § 103

On page 3 of the Office Action, the PTO has rejected claims 1-16 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent 5,874,051 to Heil *et al* (hereafter Heil). Applicant respectfully traverses this rejection for at least the reasons set forth below.

The framework for the objective analysis for determining obviousness under §103 requires:

1. Determining the scope and content of the prior art;
2. Ascertaining the differences between the claimed invention and the prior art;
3. Resolving the level of ordinary skill in the pertinent art; and
4. Considering objective evidence present in the application indicating obviousness

or nonobviousness.

*Teleflex, Inc. v. KSR Int'l Co.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). In order to establish a *prima facie* case of obviousness, all the claim limitations must be taught or suggested by the prior art. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). See MPEP §2143.03.

Here, Heil fails to teach or suggest that “the stacked body comprising a rotating passage formed by a through hole formed in each of the plates, to rotate a flow of the mixed gas” as recited in claim 1. Heil discloses that “[t]he mixed gas stream is cooled passively by static mixing structures located in the inlet area of the CO-oxidation reactor.” Heil, Abstract. This differs from the mixing disclosed by the presently claimed invention. The rotating passage as claimed in claim 1 is formed “to rotate a flow of the mixed gas,” and therefore is not static. The rotating passage actually mixes the gases dynamically, not statically, by rotating the flow of the mixed gas. The static mixing structure disclosed in Heil actually teaches away from a rotating passage that is formed “to rotate a flow of the mixed gas” as presently claimed. Heil teaches that “a static mixing structure in the input area of the CO-oxidation stage promotes uniform distribution and mixing of the mixed gas stream.” Heil, Col. 2 Ins. 49-51. Thus, Heil does not teach or suggest a rotating passage that is formed “to rotate a flow of the mixed gas” as presently claimed.

Additionally, Heil fails to teach or suggest that “the stacked body comprising a rotating passage formed by a through hole formed in each of the plates” as recited in claim 1. On page 3 of the Office Action, the PTO states that “it is within the level of ordinary skill in the art to provide a static mixing structure having any number of shapes and configurations effective in promoting uniformed distribution and mixing of gases for the apparatus of Heil.” Applicant disagrees with this assertion. Applicant respectfully notes that the PTO has not cited any art which discloses a mixing structure comprising “a rotating passage formed by a hole formed in each of the plates.” The rotating passage geometry provides many advantages over the prior art as disclosed within the present specification. For example, “even with a small flow velocity, the mixing unit 5 can adjust the uniformity of the mixed gas 22 to a preferable degree.” Pg. 11, Ins. 1-5.

For at least these reasons, Applicant submits that the outstanding rejection based upon Heil is improper and ought to be withdrawn.

If an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicant submits that claims 2-13 and 15-16, each of which ultimately depends from independent claim 1, are also non-obvious at least by virtue of their dependency from claim 1.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejection under § 103.

**Allowable Subject Matter**

Applicant acknowledges, with appreciation, the PTO's indication, on page 5 of the Office Action, that claims 17-24 would be allowable if rewritten in independent form including all of the subject matter of the base claim and any intervening claims. In this response, Applicant has rewritten claim 17 in independent form. In view of this amendment, Applicant submits that claims 17-24 are now in *prima facie* allowable form.

**Newly Added Claims**

In this response, Applicant has added independent claim 25. Heil fails to teach or suggest "an orifice that reduces a cross-sectional area of a flow of the reformat gas; a blowout hole spurting out an oxidant gas toward the reformat gas passing through the orifice to generate a mixed gas; and a mixing unit that mixes the reformat gas and the oxidant gas as a mixed gas, the mixing unit comprising: a chamber disposed downstream of the orifice and having a larger cross-sectional area than the cross-sectional area of the orifice; and a stacked body of a plurality of plates, the stacked body comprising a helical passage connected to the chamber, and formed by a through hole formed in each of the plates, to rotate a flow of the mixed gas." Thus, Applicant believes that the outstanding rejections under 35 USC §103(a) do not properly apply to newly added claim 25.

**CONCLUSION**

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated,

otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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